



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,001	04/17/2004	Anatoly E. Rokhvarger		9211

51896 7590 04/17/2008  
ILYA ZBOROVSKY  
6 SCHOOLHOUSE WAY  
DIX HILLS, NY 11746

EXAMINER
----------

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
----------	--------------

1793

MAIL DATE	DELIVERY MODE
-----------	---------------

04/17/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/826,001	<b>Applicant(s)</b> ROKHVARGER ET AL.	
	<b>Examiner</b> KALLAMBELLA VIJAYAKUMAR	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 13-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/26/2007 has been entered.

The amendment to abstract and claims filed 01/28/2008 has been entered. Claims 1-12 cancelled. Claims 13-20 were newly added which are currently pending with the application.

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### *Response to Amendment*

The declaration under 37 CFR 1.132 filed 01/30/2008 is **insufficient** to disqualify the reference of Topchiashvili (US 6,010,983) under 35 USC 103(c). The reference by Topchiashvili (US 6,010,983) additionally qualifies as prior art under another subsection of 35 U.S.C. 102, and therefore, is not disqualified as prior art under 35 U.S.C. 103(c). 35 U.S.C. 103(c), as amended by the CREATE Act, applies only to subject matter which qualifies as prior art under 35 U.S.C. 102(e), (f), or (g), and which is being relied upon in a rejection under 35 U.S.C. 103. In addition, if the subject matter qualifies as prior art under any other subsection of 35 U.S.C. 102 (e.g., 35 U.S.C. 102(a) or (b)) it will not be disqualified as prior art under 35 U.S.C. 103(c) (See MPEP 2146(R-3); 2136).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 13-16, 18 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim -13 recites the limitation of "first phase elements constituted by nano-size superconducting ceramic crystal grains which are substantially uniformly and tightly aligned in a-b crystallographic planes along a major direction of an electric current flux of the superconducting electric lead" is not disclosed in the specification.

Claim -14 recites the limitation of "ceramic crystal grains have a size up to 100 nm and have same sizes" is not disclosed in the specification which discloses 10-25 nm (Spec, US 2005/0255680, P-0082). Further, the limitation of "ceramic crystal grains produced from a salt solution using a chemical precipitation technique," is not disclosed in the specification.

Claim -15 recites the limitation of "a full-dense sintered ceramics with an apparent density 99.1%-99.9%, wherein said full dense sintered ceramics has a high tightness between said superconducting ceramic crystal grains" is not disclosed in the specification.

Claim-16 recites the limitation of "nano-structure is configured so that it defines long-term resistance in air and cryogenic ambiances of the superconducting ceramics electric lead" is not disclosed in the specification.

Claim -18 recites the limitation of "insignificant heat losses < 0.5%" is not disclosed in the specification.

Claim -20 recites the limitation of "YBCO superconductor ceramic crystal grains have three-dimensional sizes 20-30 nm, 5-10 rim, 5-10 nm" is not disclosed in the specification.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 13-19 are rejected under 35 U.S.C. 103(a) as obvious over Topchiashvili et al (US 6,010,983) in view of Dorris et al (US 5,866,515) .

*In the absence of a definition of a nano-size, nano-phase, nano-thick and nano-structure by the applicants, the examiner construes the terms to encompass a size of 1-1000 nm commonly taught in the nanotechnology art (See. Philips et al, US 6,755,886; Cl-2, Ln 21-25; or Domb et al US 5,578,325, Cl-10, Ln 24-43).*

Art Unit: 1793

Topchiashvili et al teach a sintered superconductor wire composition <3D-lead> containing an aligned/oriented superconductor ceramic oxide of YBCO. The coated wire was made by coating a substrate with an emulsion containing the ceramic YBCO particles, ultra-fine Ag-particles <nano particles that reads on dope particle; see Cl-4, Ln -4> and liquid-silicone polymer <silicate precursor>. The wet coated wire was processed by magnetically orienting YBCO particles in a preferred direction <c-axis>, slowly polymerizing of the silicone around 250C and heat treating the composition between 800-950C. Topchiashvili et al further teach the presence of a uniform dispersion of Ba<sub>2</sub>SiO<sub>4</sub> (silicate glass phase) and components such as SiC, Si, C and BaCO<sub>3</sub> (impurity and phases due to superconductor break down) in the wire composition (Abstract, Fig 2-3; Cl-1, Ln 41 to Cl-2, Ln 33; Cl-3, Ln 1 to Cl-4, Ln 23; Cl-5, Ex-1). Topchiashvili et al teach using an emulsion to coat the substrate, but it does not explicitly disclose the particle size of the YBCO ceramic oxide.

The prior art is silent about the particle size of the HTS superconductor particles, and the nanostructure of the sintered lead composition, and the orientation of the ceramic crystals in a-b-c planes per the claim-13.

In the analogous art, Dorris et al teach forming superconductor coated silver wires by applying the superconductor powder dispersed in a polymer carrier and/or solvent wherein the particle size of the superconductor particles ranged from 0.1-5 micron (Abstract, Cl-3, Ln 10-37), and further removing the organic material by heat treatment (Cl-8, Ln 1-19).

It would have been obvious to a person of ordinary skilled in the art to substitute the superconductor powders in the structure of Topchiashvili et al with the superconductor powders of Dorris et al as functional equivalent with predictable results and reasonable expectation of success, because the teachings are in the analogous art of coated HTS oxide superconductor wires. With regard to the structure of the sintered lead/wire, the prior art composition, structure and method of making the wire including components processed and the process parameters, and utility of the wire are similar to that taught by the applicants (Specification, Page-13, Para-2-4; Pg-14, Ln 17-24, Pg-15, Para-2, 4) whereby the instant claimed nano-phase honeycomb-like three dimensional setting network structure will be obvious in the prior art composition because similar compositions are expected to possess similar

Art Unit: 1793

properties and characteristics, and where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Further c-axis orientation of superconductor oxide crystals by the applied magnetic field in the processing of the wire would be obvious in view of Holloway that clearly teaches attaining C-axis orientation by magnetic alignment of YBCO particles with improved current density (See Holloway; US 5,529,981, Abstract, Cl-10, Ln 37-65).

With regard to claim 14, the combined prior art teaches superconductor particles with a size of 0.1 micron (100 nm) and the presence of superconductor ceramic crystal grains up to 100 nm would be obvious in the prior art structure. Furthermore, the prior art composition, its structure and characteristics will be similar to that obtained the specific product by process step.

With regard to claims 15-18, the prior art structure, composition, method of making the structure and its utility are similar to that claimed by the applicants, and where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

With regard to claim 19, the prior art teaches YBCO.

2. Claims 13 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rokhvargher et al (US 6,617,284).

The applied reference has a common Inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to

the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Rokhvarger et al teach a superconductor wire composition <3D-lead> containing an aligned/oriented superconductor ceramic oxide of YBCO made by coating a substrate with an emulsion containing the ceramic YBCO particles, Ag-particles and liquid-silicone polymer <silicate precursor>, magnetically orienting the YBCO particles, polymerizing the silicone and heat treating the composition between 800-950C. Rokhvarger et al further teach the presence of a uniform dispersion of Ba<sub>2</sub>SiO<sub>4</sub> (silicate glass phase) and components such as SiC, Si, C and BaCO<sub>3</sub> (impurity and phases due to superconductor break down) in the wire composition. The coating suspension composition comprised of a micron-size particle of Y-Ba-Cu-O (i.e. 1-micron) and silver particles with a particle size less than 1 micron that meets the limitation of nano-sized dope. YBCO particle with "a micron size" overlaps with the art defined 1-micron limit and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

The prior art is silent about the nanostructure of the sintered lead composition, and the orientation of the ceramic crystals in a-b-c planes per the claim-13.

With regard to the structure of the sintered lead/wire, the prior art composition, structure and method of making the wire including components processed and the process parameters, and utility of the wire are similar to that taught by the applicants (Specification, Page-13, Para-2-4; Pg-14, Ln 17-24, Pg-15, Para-2, 4) whereby the instant claimed nano-phase honeycomb-like three dimensional setting network structure will be obvious in the prior art composition because similar compositions are expected to possess similar properties and characteristics, and where the claimed and prior art products are identical



Art Unit: 1793

or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Further c-axis orientation of superconductor oxide crystals by the applied magnetic field in the processing of the wire would be obvious in view of Holloway that clearly teaches attaining C-axis orientation by magnetic alignment of YBCO particles with improved current density (See Holloway; US 5,529,981, Abstract, Cl-10, Ln 37-65).

With regard to claims 15-18, the prior art structure, composition, method of making the structure and its utility are similar to that claimed by the applicants, and where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

With regard to claim 19, the prior art teaches YBCO.

### ***Response to Arguments***

Applicant's arguments filed 01/28/2008 have been fully considered but they are not persuasive. With regard to the argument that none of the references teaches the claimed features of the structure in claim-13 (Res, Pg-6, Para-1; Pg-7, Para-1), the prior art components used in making the wire and its processing conditions, its composition and its utility are similar to that claimed by the applicants, and the claimed structures should be present in the prior art structure, and thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). >In In re Crish, 393 F.3d 1253, 1258, 73 USPQ2d 1364, 1368 (Fed. Cir. 2004).

With regard to the argument that ultra-fine Ag particles of Topchiashvili can be of any sizes within ultra-fine range, but not necessarily of nano- sizes, and the reference simply does not disclose this feature, the prior art clearly teaches the silver particles to be silver nano-powder (Cl-4, Ln 4). Further more, the ultrafine encompasses a particle size in the range of 1-300 nm (See Strangle, US 5,660,774,

Art Unit: 1793

CI-1, Ln 16-18), and nano-size encompasses up to a 1-micron in nanotechnology that are within the scope of instant claimed "Nano" in the absence of its definition by the applicants.

For the reasons set forth above, applicant's fail to patentably distinguish their structure over the prior art.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/  
April 10, 2008.

/Stanley Silverman/  
Supervisory Patent Examiner, Art Unit 1793